

Title (en)  
HIGH-PRESSURE SYNTHESIS OF DIAMOND

Title (de)  
HOCHDRUCKSYNTHESE VON DIAMANTEN

Title (fr)  
SYNTHÈSE DE DIAMANT À HAUTE PRESSION

Publication  
**EP 3646944 A1 20200506 (EN)**

Application  
**EP 18203509 A 20181030**

Priority  
EP 18203509 A 20181030

Abstract (en)  
Disclosed herein are a device and a method for synthesizing diamond. The device comprises an inner capsule containing a buffer medium for stabilizing a hydrogen fugacity, the inner capsule consisting of a hydrogen-permeable material; an outer capsule enclosing the inner capsule, wherein the outer capsule contains a reaction medium containing reactants for a chemical reaction yielding diamond; and a pressure medium surrounding the outer capsule, wherein the pressure medium is configured to transfer a pressure applied to an outer surface of the pressure medium to an outer surface of the outer capsule and wherein the pressure medium is further configured to inhibit hydrogen exchange through the pressure medium at a temperature of the pressure medium and a pressure applied to the pressure medium that are required to transform the reaction medium to a supercritical phase.

IPC 8 full level  
**B01J 3/06** (2006.01)

CPC (source: EP)  
**B01J 3/065** (2013.01); **B01J 2203/0655** (2013.01)

Citation (applicant)  
• A. G. SOKOL ET AL., DIAMOND AND RELATED MATERIALS, vol. 10, 2001, pages 2131  
• I. KONYASHIN ET AL., MATERIALS LETTERS, vol. 183, 2016, pages 14  
• A. G. SOKOL ET AL., GEOCHIMICA ET COSMOCHIMICA ACTA, vol. 73, 2009, pages 5820  
• V. MATJUSCHKIN ET AL., CONTRIB. MINERAL PETROL, vol. 169, 2015, pages 9

Citation (search report)  
• [A] US 2003141301 A1 20030731 - D EVELYN MARK PHILIP [US], et al  
• [A] AKAISHI M ET AL: "Crystallization of diamond from C-O-H fluids under high-pressure and high-temperature conditions", JOURNAL OF CRYSTAL GR, ELSEVIER, AMSTERDAM, NL, vol. 209, no. 4, 1 February 2000 (2000-02-01), pages 999 - 1003, XP004198428, ISSN: 0022-0248, DOI: 10.1016/S0022-0248(99)00756-3  
• [A] HONG S M ET AL: "Nucleation of diamond in the system of carbon and water under very high pressure and temperature", JOURNAL OF CRYSTAL GROWTH, ELSEVIER, AMSTERDAM, NL, vol. 200, no. 1-2, 1 April 1999 (1999-04-01), pages 326 - 328, XP004168187, ISSN: 0022-0248, DOI: 10.1016/S0022-0248(98)01288-3

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)  
BA ME

DOCDB simple family (publication)  
**EP 3646944 A1 20200506**; WO 2020089204 A1 20200507

DOCDB simple family (application)  
**EP 18203509 A 20181030**; EP 2019079484 W 20191029